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Apr 6, 2000

DERWENT-ACC-NO: 2000-304825  
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TITLE: Nematic liquid crystal medium for use in electro-optical displays contains dielectrically positive compounds, dielectrically negative compounds and optionally dielectrically neutral compounds

INVENTOR: HECKMEIER, M; REUTER, M ; SCHULER, B ; TARUMI, K

PRIORITY-DATA: 1999DE-1016496 (April 12, 1999), 1998DE-1039146 (August 28, 1998), 1999DE-1009238 (March 3, 1999)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
DE 19940655 A1	April 6, 2000		039	C09K019/06
JP 2000080370 A	March 21, 2000		031	C09K019/42

INT-CL (IPC): C07 C 13/28; C07 C 25/18; C07 C 25/24; C07 C 43/184; C07 C 43/225; C07 C 69/75; C07 D 213/24; C07 D 239/26; C09 K 19/06; C09 K 19/14; C09 K 19/16; C09 K 19/18; C09 K 19/20; C09 K 19/30; C09 K 19/34; C09 K 19/42; G02 F 1/13; G09 F 9/35

ABSTRACTED-PUB-NO: DE 19940655A

## BASIC-ABSTRACT:

NOVELTY - Nematic liquid crystal (LC) medium containing dielectrically positive compound(s), dielectrically negative compound(s) and optionally dielectrically neutral compound(s).

DETAILED DESCRIPTION - Nematic LC medium containing (a) dielectrically positive compound(s) of formula (I), (b) dielectrically negative compound(s) (II) and optionally (c) dielectrically neutral compound(s) (III):

R1, R21, R22, R31, R32 = 1-7C alkyl or alkoxy, or 2-7C alkoxyalkyl, alkenyl or alkenyloxy;

Z11, Z12, Z13, Z21, Z22 = -CH<sub>2</sub>CH<sub>2</sub>-, -CH=CH-, -C equivalent to C-, -COO- or a single bond;

Z31-Z33 = -CH<sub>2</sub>CH<sub>2</sub>-, -CH<sub>2</sub>O-, -OCH<sub>2</sub>-, -CF<sub>2</sub>O-, -OCF<sub>2</sub>-, -COO- or a single bond, and one of these may also = -CF<sub>2</sub>CF<sub>2</sub>-;

A11-A13 = trans-1,4-cyclohexylene (Cyc), 1,3-dioxan-2,5-diyl (Diox), 1,4-phenylene (Phe), 3-fluoro-Phe (3FP) or 3,5-difluoro-Phe (35DFP);

A21, A22 = Cyc, Phe, 3FP, 2,3-difluoro-Phe (23DFP), pyridine-5,2-diyl (52PDL) or pyrimidine-5,2-diyl (PMDL);

A31-A34 = Cyc, Phe, 3FP, 5-fluoro-Phe (5FP), 52PDL, pyridine-2,5-diyl (25PDL), Diox or PMDL;

X = F, OCF<sub>2</sub>H or OCF<sub>3</sub>;

Y = F if X = F or OCF<sub>2</sub>H, or Y = H or F if X = OCF<sub>3</sub>;

L1 = L2 = C-F, or one of these is N and the other is C-F;

n, m, l, o, p = 0 or 1

An INDEPENDENT CLAIM is also included for electro-optical displays containing an LC medium as defined, preferably active matrix displays with 3-pole active switches.

USE - In electro-optical displays (claimed). Useful especially in active matrix displays with 3-pole active switches.

ADVANTAGE - Enables the production of electro-optical displays (e.g. TFT-controlled TN-AMD displays) showing good contrast with little dependence on the angle of view and a small difference between the capacities of adjacent pixels in the on and off states, resulting in minimal cross-talk between these pixels.

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Term	Documents
POSITIVE.DWPI,TDBD,EPAB,JPAB,USPT.	807273
POSITIVES.DWPI,TDBD,EPAB,JPAB,USPT.	5940
NEGATIVE.DWPI,TDBD,EPAB,JPAB,USPT.	667112
NEGATIVES.DWPI,TDBD,EPAB,JPAB,USPT.	8237
NEUTRAL.DWPI,TDBD,EPAB,JPAB,USPT.	233175
NEUTRALS.DWPI,TDBD,EPAB,JPAB,USPT.	1183
LIQUID.DWPI,TDBD,EPAB,JPAB,USPT.	1807504
LIQ.DWPI,TDBD,EPAB,JPAB,USPT.	309243
LIQS.DWPI,TDBD,EPAB,JPAB,USPT.	11202
LIQUIDS.DWPI,TDBD,EPAB,JPAB,USPT.	223845
CRYSTALS	0
.....	
CRYSTALS\$(CRYSTALLOGRAA).USPT,JPAB,EPAB,DWPI,TDBD.	pickup term
(POSITIVE SAME NEGATIVE SAME NEUTRAL SAME LIQUID CRYSTALS\$.USPT,JPAB,EPAB,DWPI,TDBD.	26

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<i>DB=USPT,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=ADJ</i>			
<u>L14</u>	positive same negative same neutral same liquid crystal\$	26	<u>L14</u>
<u>L13</u>	L11 and l10	1	<u>L13</u>
<u>L12</u>	L11 same l10	0	<u>L12</u>
<u>L11</u>	pch-???ff or ccp-???ff	8	<u>L11</u>
<u>L10</u>	cczu-?-\$ or cdu-?-\$ or cgu-?-\$	24	<u>L10</u>
<u>L9</u>	L5 and (silicon\$ or siloxan\$)	0	<u>L9</u>
<u>L8</u>	L5 and (monomer\$ or polymer\$)	0	<u>L8</u>
<u>L7</u>	L5 and nematic	3	<u>L7</u>
<u>L6</u>	L5 and dye\$	3	<u>L6</u>
<u>L5</u>	us-4749261-\$.did.	3	<u>L5</u>
<u>L4</u>	us-4749261-\$.did.L3	0	<u>L4</u>
<u>L3</u>	L1 and liquid crystal\$	7	<u>L3</u>
<u>L2</u>	L1 same liquid crystal\$	0	<u>L2</u>
<u>L1</u>	dimethylsiloxane with surfactant\$	208	<u>L1</u>

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POSITIVES.DWPI,TDBD,EPAB,JPAB,USPT.	5940
DIELECTRIC\$	0
DIELECTRIC.DWPI,TDBD,EPAB,JPAB,USPT.	322669
DIELECTRICA.DWPI,TDBD,EPAB,JPAB,USPT.	30
DIELECTRICABLE.DWPI,TDBD,EPAB,JPAB,USPT.	1
DIELECTRICAIR.DWPI,TDBD,EPAB,JPAB,USPT.	1
DIELECTRICAL.DWPI,TDBD,EPAB,JPAB,USPT.	1244
DIELECTRICALIZATION.DWPI,TDBD,EPAB,JPAB,USPT.	1
DIELECTRICALL.DWPI,TDBD,EPAB,JPAB,USPT.	12
DIELECTRICALLT.DWPI,TDBD,EPAB,JPAB,USPT.	1
(L2 AND POSITIVE DIELECTRIC\$).USPT,JPAB,EPAB,DWPI,TDBD.	28

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	<i>DB=USPT,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=ADJ</i>		
<u>L3</u>	L2 and positive dielectric\$	28	<u>L3</u>
<u>L2</u>	l1 and 2,3-difluoro\$	38	<u>L2</u>
<u>L1</u>	positive and negative and neutral and liquid crystal\$	1314	<u>L1</u>

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<u>L8</u>	L1 and threshold	2	<u>L8</u>
<u>L7</u>	L1 and anisotropy	2	<u>L7</u>
<u>L6</u>	L1 and tft	1	<u>L6</u>
<u>L5</u>	active matrix with three pole	4	<u>L5</u>
<u>L4</u>	L1 and nematic	1	<u>L4</u>
<u>L3</u>	L1 and active	1	<u>L3</u>
<u>L2</u>	WO-9823563-\$.did.	2	<u>L2</u>
<u>L1</u>	us-6210761-\$.did.	2	<u>L1</u>

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